JACKSON'S FERRY BRIDGE
(Bridge No. 1017)
Route 52 over the New River,
6.3 miles south of Route 94
Jackson's Ferry vicinity
Wythe County
Virginia

HAER No. VA-113

HAER
VA,
99-JACFR.V,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

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LOCATION: Route 52 over the New River, 6.3 miles south of Route 94
Jackson's Ferry vicinity, Wythe County, Virginia
UTM: 17.511680.4080500
Quad: Sylvatus, Virginia

DATE OF CONSTRUCTION: 1930-1931

BUILDER: Virginia Bridge & Iron Company, Roanoke, Virginia

PRESENT OWNER: Virginia Department of Transportation

SIGNIFICANCE: The Jackson's Ferry Bridge is a representative example of a riveted steel simple triangular through truss and a riveted steel continuous cantilever triangular through truss, typical of early to mid-twentieth century factory-manufactured bridges.

PROJECT INFORMATION: The Jackson's Ferry Bridge was recorded in April 1995 by the Cultural Resource Group of Louis Berger & Associates, Inc., Richmond, Virginia, for the Virginia Department of Transportation (VDOT). The recordation was undertaken pursuant to a Memorandum of Agreement between the U.S. Army Corps of Engineers and the Virginia SHPO, concurred in by VDOT, and accepted by the Advisory Council on Historic Preservation. Project personnel included Richard M. Casella, Architectural Historian, and Rob Tucher, Photographer.

DESCRIPTION

Jackson's Ferry Bridge (VDOT Bridge No. 1017) is a six-span, riveted and pin-connected steel through truss bridge which carries two lanes of Virginia State Route 52 in a north-south direction over the New River, 6.31 miles south of the junction of Route 52 and Route 94, in Wythe County, Virginia (Figure 1). Overall, the bridge is 770' long, consisting of three simple triangular through truss spans, each 120' in length, and a continuous three-span triangular through truss, 400' in length, which consists of two cantilever trusses carrying a suspended truss, with spans of 80', 200', and 120'.

At the point of the bridge crossing, the riverbed is approximately 250' wide and it is spanned by the cantilever truss at a height of approximately 30' above the normal water elevation. The three simple trusses serve as approach structures over the floodplain on the north side of the river and span the plain at an average height of approximately 20'. The river attains a maximum depth of approximately 15' during normal water. The bridge is bounded to the north and south by moderately steep wooded hillsides. A nineteenth century operating farmstead, with numerous barns and outbuildings, abuts the bridge right-of-way on the north side of the river; open pastures extend east and west along the floodplain and valley slopes. Atop the bluff to the southwest of the bridge is an early nineteenth century stone shot tower and an associated state park. The former right-of-way of the Norfolk and Western Railroad crosses over Route 52 about 50' south of the bridge.

The trusses are all of the modified Warren or triangular type, characterized by diagonal members which function in both tension and compression. All members of the bridge are steel and are joined with rivets, except for the suspended truss which hangs on pinned connections. The trusses are 22' high and 26' wide overall, with the exception of the cantilever sections, which reach a maximum height of 40'. The panels of all of the trusses are 20' in width. The three 120' simple trusses have six panels each, the 80' suspended truss has four panels, the south cantilever truss has seven panels, and the north cantilever truss has nine panels.

The top chords of the 120' simple trusses consist of riveted H-sections, 12" x 16" overall, built with 16" x 3/8" top plate, 12" x 3" side channels with flanges turned out, and 2-1/4" x 3/8" bottom lacing bars. The top chords of the suspended truss are identical to those of the simple trusses, except that they are built with top lacing bars instead of plate. The top chords of the cantilever truss are of two types: in the panels to either side of the main post, the chords are 12" channels joined with a single 9" x 5" rolled I-beam; in all other panels the top chord consists of double 12" channels joined with batten plates top and bottom. Bottom chords consist of two 10" channels, joined with either lacing bars top and bottom or 9" x 5" I-beam.

Diagonals on the cantilever trusses are double 12" channels connected with either batten plates or lacing bars. The diagonals of the simple trusses are either double 9" channels with lacing bars or 8" x 8" rolled H-sections. The main vertical post at the center of the cantilever spans consists of a riveted H-section with 15" x 3-1/2" channel flanges and a web of double 9" x 3" channels. Truss verticals, which act as chord stiffeners and floor beam hangers, are 8" x 4" I-beams. Portal struts are triangular truss girders constructed of riveted I-sections with T-section flanges and lattice-bar webbing. Upper lateral struts are also lattice-bar I-sections. Upper lateral bracing members are riveted C-sections built from angles and web plates. Knee bracing and transverse sway braces are single 4" x 3" angles.

The floor beams are 30" x 10" rolled I-beams, riveted with angles and gusset plates to the posts and diagonals. The floor stringers are 20" x 8" rolled I-beams, riveted with angles to the deck beams. Bottom lateral braces are 3" x 2-1/2". The simple trusses rest on fixed plate and friction plate bearings attached to the bottom chord with 6" pins. The cantilever spans rest on fixed plate bearings with the cantilever anchor arms restrained by link expansion bearings.

The reinforced concrete deck is 8" thick and 24' wide, with integral curbing 10" high. The bridge railings are two horizonal runs of 2-1/2" pipe, U-bolted to angle posts and structural members. Both ends of the bridge rest on concrete gravity abutments. The south abutment is straight, with a solid breast wall, while the north abutment is an open or spill-through abutment. The bridge spans are carried by reinforced concrete column piers with solid web walls, varying in height from 21' to 30' above grade. The piers consist of two tapered cylindrical columns spaced 25' apart on center, and measuring approximately 7' in diameter at the bottom and 5' in diameter at the top. The columns are joined with an integral solid concrete web wall, 12" thick.

HISTORICAL INFORMATION

Background

Wythe County was formed in 1790. It was named in honor of George Wythe, first Virginia signer of the Declaration of Independence and first teacher of law in America, at the College of William & Mary. The first court session of the county was held at Fort Chiswell, about ten miles northwest of Jackson's Ferry Bridge. When it was formed, Wythe County covered an area that included all or part of what is now Smyth, Grayson, Carroll, Tazewell, Giles, and Bland counties. In 1861, after a series of divisions to create the aforementioned counties, the boundaries of Wythe County were established as they now exist, encompassing approximately 460 square miles (Kegley 1986:49).

The eastern portions of Wythe County were settled by Scots-Irish immigrants in the mid-eighteenth century. By the end of the century these settlers had established charcoal furnaces and iron forges in the region around Jackson's Ferry Bridge. John Bingeman was the first person to settle and make improvements to the lands surrounding Jackson's Ferry, having obtained land patents to several parcels in 1753. The land was referred to as Poplar Camp at that time and may have been named during surveys made for a Colonel Patton sometime prior to 1851. In 1755, Bingeman, his wife, and several family members were killed by Indians; a son, John, Jr., and a daughter were wounded but survived. The massacre is speculated to have occurred just to the west of the bridge. John Bingeman, Jr. sold the Poplar Camp lands to Thomas Stanton in 1762, and Stanton, in turn, sold the property to William Herbert in 1767. Herbert had arrived in America from England only a year earlier. Although lead had been discovered and was being profitably mined about two miles up the New River from Poplar Camp, Herbert set to farming his land. He established a ferry over the New River about 200' west of the present Jackson's Ferry Bridge prior to 1770. His land holdings included a 400-acre parcel on the north side of the river where he landed his ferry, and 1,000 acres on the south side which he developed into a plantation. By his will of 1776 Herbert left the property to his son, William Herbert, Jr., and provided a home on the north side of the river adjacent to the ferry for his father and mother, who survived him. William, Jr. sold the parcel on the north side of the river, known as "Herberts Ferry," to William Carter in 1793, reserving a quarter-acre "ferry landing" and a strip of land one rod wide and forty rods long centering on the public road. Probably at about the same time, Herbert sold the Poplar Camp Plantation, which included a "mill and ferry" and the "home place," to his brother Thomas (Kegley 1926:n.p.; Kegley 1986:64).

In 1811 Thomas Herbert sold Poplar Camp Plantation to Jesse Evans, who had been operating the ferry for several years. A dispute regarding the ferry rights arose between Evans and Stephen Sanders, who had bought the Carter parcel on the north side of the river. The two filed trespass charges against one another, and the legal tug-of-war that ensued lasted several years. The feud was finally settled in court in 1813. Evans obtained full rights to the ferry operation for $300 in livestock and his agreement to the lifetime right of free passage on the ferry for Sanders and his family. Two years later, in 1815, Evans sold the plantation and the ferry to Thomas Jackson for the sum of $12,000 (Beckett and Downing 1995:4; Kegley 1926:1).

Thomas Jackson had come to America from Westmoreland County, England, in 1793 and became employed with the Lead Mining Company at Austinville as a mining smith. In 1804, Jackson purchased the Commonwealth's share of the mine through a bond agreement with co-owners David Pierce and Daniel Sheffey. At some point Sheffey withdrew from the partnership, leaving Jackson and Pierce as the sole owners and operators of the mine. Both men prospered greatly from the lead mining operation. Jackson invested his money in land, purchasing several farms along the New River, including the Poplar Camp Plantation. In an effort to increase his return on the sale of the lead which he produced, Jackson constructed a tower at his Poplar Camp property for the manufacture of lead shot. The 75' limestone tower was built between 1815 and 1820 and was operated by Jackson until he died, a bachelor, in 1824. Jackson's nephews, Michael and Robert, inherited parts of the estate and, upon selling the Jackson interests in the lead mines in 1830, ceased operation of the shot tower. In 1835, the two nephews rented the tower to another nephew, Robert Raper, who planned to resume the manufacture of shot, although the outcome of his plans is not known (Kegley 1989:360-361).

In 1928, M.H. Jackson, grandnephew of Thomas, donated the tower to the Daughters of the American Revolution for preservation. The tower was transferred to the Virginia Division of State Parks and listed on the National Register of Historic Places in 1969, and was designated a National Historic Mechanical Engineering Landmark by the Association of Mechanical Engineers in 1981. The ferry, meanwhile, remained under the continual ownership and operation of the Jackson family throughout the nineteenth century and up until the time it ceased operation with the opening of the bridge in 1931 (Jones 1993:7; Kegley 1989:360; *Southwest Virginia Enterprise* 1928b:1).

Like many inland ferry operations throughout America, Jackson's Ferry was made obsolete during the great expansion of the country's road system during the early twentieth century. Southwestern Virginia experienced an overall economic expansion following World War I. With the ever-increasing business activity in Wythe County came a demand for better roads to allow easier access to the goods and services in the towns.

There were over eight million automobiles registered in the United States by 1920. While the automobile brought dramatic changes to the inhabitants of rural, primarily agricultural, regions such as southwestern Virginia, their use was hampered by poor roads. In Wythe County at the beginning of the 1920s, roads were largely unpaved, with steep grades and fords frequently rendered impassable by the weather. Farmers were particularly anxious for improvements that would allow them to get their products to market faster and on a more frequent basis. Urban dwellers were interested in construction of federal interstate highways through their cities to bring out-of-town travelers, commerce, and investment.

The demand for better roads in Wythe County was spearheaded by Colonel R.P. Johnson, one of the founders and the first president of the Great Lakes to Florida Highway Association, established in 1924. The purpose of the association was to unite the citizens and public officials of Ohio, West Virginia, Virginia, and North Carolina into a powerful lobbying group to push for the completion of Federal Route 21 between Cleveland, Ohio, and Jacksonville, Florida. The planned route would take the highway through the county seat of Wytheville. By the end of the decade, a section of the road was complete from West Virginia south to Wytheville. Route 15 over Jackson's Ferry served as the main road for traffic continuing south into North Carolina. While the push for completion of Highway 21 south out of Wytheville continued, local attention turned toward the construction of a bridge on Route 15 to replace Jackson's Ferry (Kegley 1989:72; *Southwest Virginia Enterprise* 1931c:1).

History of Jackson's Ferry Bridge

The present Jackson's Ferry Bridge was the first bridge to be constructed at the site, replacing a ferry crossing which had been in operation for over 150 years. The Carroll County Road Board and Board of Supervisors met in February 1928 and unanimously adopted a proposal to construct a bridge over the New River at Jackson's Ferry. The idea of erecting a bridge at this location was strongly supported by R.P. Johnson, a resident of Wytheville and President of the Lakes to Florida Highway Association. Johnson saw the bridge as a good temporary means of promoting north-south highway traffic through Wytheville while the construction of the Lakes to Florida Highway (Federal Route 21) continued. Although the bridge would effectively put M.H. Jackson's ferry operation out of business, Jackson indicated that "for the sake of the best interests of the public, he would not strenuously oppose the bridge" (*Southwest Virginia Enterprise* 1928a:1).

In April 1929 drawings for the proposed Jackson's Ferry Bridge were completed by the Virginia Department of Highways and approved by William P. Glidden, Bridge Engineer, and C.S. Mullen, Chief Engineer (Virginia Department of Highways 1929). The original plans for the bridge called for a seven-span bridge with four 120' spans crossing the floodplain on the north side. At some point in the planning, it was decided that a solid fill approach could be substituted for the first of these spans without seriously affecting the river flow during flood stage.

This design change was almost surely based on the savings afforded by buying one less steel truss, and may have been motivated by the withdrawal of federal funds for the project. In August of 1930, the United States Bureau of Public Roads withdrew federal aid for five bridge construction projects around the state, including the Jackson's Ferry Bridge. The War Department had claimed that the New River was a navigable waterway at the point of the proposed Jackson's Ferry Bridge, and therefore would not give authorization for construction of a bridge. The War Department was misinformed, for in fact none of the proposed bridges crossed navigable waters, and in the case of the Jackson's Ferry Bridge, there already existed four other bridges crossing the New River at points further downstream. State Highway Commissioner Henry G. Shirley announced that the War Department's decision would be fought but that the projects would go forward with state funds regardless of the outcome. Congressman Joseph C. Shaffer took up the matter in Washington; however, the outcome of the dispute, and whether federal funds were ultimately used for the Jackson's Ferry Bridge, could not be determined (*Southwest Virginia Enterprise* 1930:1).

The contract for the construction of the bridge was awarded in 1930 to R.H.H. Blackwell & Company, General Contractors. The contract for the steel fabrication and erection of the bridge was awarded to the Virginia Bridge & Iron Company (VBI) of Roanoke, Virginia. General notes on the erection plans, drawn by VBI and dated July 31, 1930, state that the design was by

W.R. Craven, bridge engineer with the Virginia Department of Highways, although Craven's name does not appear on the state plans. Also noted was that the truss erection would be carried out by A.N. Campbell & Company, with no address given (Virginia Bridge & Iron Company 1930).

The exact date that construction began could not be learned. However, since the bridge was completed in March of 1931, construction of the concrete piers and abutments must have been underway in the summer of 1930. A photograph taken in the winter of 1929-1930 shows the ferry in operation transporting a Camel City Lines bus across the river. The ferry was guided by a cable, although the means of locomotion is not apparent. There is no evidence in the photograph that any bridge construction is underway (Kegley 1989:64).

On March 6, 1931, the Wytheville newspaper, *Southwest Virginia Enterprise*, reported "New Bridge at Jackson Ferry Completed." The article noted that the bridge was located on Federal Route 121 and State Route No. 15, was twenty-four feet wide between the guardrails, and had the capacity of two twenty-ton trucks passing each other. The steelwork of the bridge was reported to weigh 440 tons. The approaches were still under construction and the bridge was expected to be open within several weeks (*Southwest Virginia Enterprise* 1931a:1).

Another article, which appeared in the newspaper on March 10, stated that the north approach of the bridge was completed with a hard surface, and that while the south approach was still under construction, motorists could get through by careful driving (*Southwest Virginia Enterprise* 1931b:1). However, it was not until March 27 that the official opening of the bridge was announced, and "autoists" were "invited to make a trip of inspection" (*Southwest Virginia Enterprise* 1931c:1).

No records of inspection, maintenance, or repair of the bridge prior to 1955 were located. Repairs were made to the bridge in 1955, 1959, 1964, 1966, and 1970 and are discussed below. Microfilm plans of the repairs are retained on permanent file at the Virginia Department of Transportation, although no other documentation pertaining to the repairs was saved. In 1972 a statewide annual bridge inspection program was begun and detailed structural condition reports have been retained from that date forward. No major repairs to the bridge have been made since 1972.

In 1955, modifications were made to the knee braces connecting the verticals and the upper struts to achieve greater vertical clearance. It could not be determined from the plans if any of the existing braces were damaged from an impact (VDOT Plan No. 37-25A, 1955).

In 1959, the northernmost truss was knocked off the abutment, presumably as a result of vehicle impact. The north truss was lifted and supported on temporary piers while the end posts and portal bracing were replaced. A section of bottom chord and associated floor beam connection angles were also replaced at the same location and several members were straightened and reused. Repairs required a total of 3,600 pounds of structural steel (VDOT Plan No. 37-25B, 1959).

In 1964, the north truss was again knocked off the abutment, requiring almost the same repairs as those made in 1959. The temporary piers had been stored under the bridge and were reused to support the north truss while an endpost, floor beam connections, railing sections, and a hip-vertical were replaced (VDOT Plan No. 37-25C, 1964).

In 1966, the portals on all of the trusses were altered to obtain additional vertical clearance. The portal knee braces were entirely removed and triangular gusset plates were installed where the bottom chord of the portal strut meets the endpost, and at the first lower panel connection of the portal strut (VDOT Plan No. 37-25D, 1966).

In 1970, a section of concrete deck was replaced beginning at pier No. 5 and running 60' south. The new 8"-thick deck required 376 cubic yards of concrete and 9,960 pounds of reinforcing steel (VDOT Plan No. 37-25E, 1970).

In 1972, the first inspection report was filed. Inspectors found the bridge in generally good condition, with light spalling of the concrete curbs, abutments, pier caps, and pier columns (VDOT Original Bridge Report, August 1, 1972).

In 1983, a memorandum was sent to all district engineers instructing each to identify bridges within their districts with fracture-critical members and to initiate an annual inspection program for those members. The main cantilever truss structure of Jackson's Ferry Bridge has two fracture-critical members, namely, the tension members U9L9 and U13L13 supporting the suspended truss. Subsequent inspection of those members and the associated pin and plate connections revealed moderate section loss and corrosion (VDOT Inspection Reports and Memorandums 1983, 1984).

The 1991 inspection found the bridge in fair condition, with continued spalling and cracking of the concrete members and light to heavy rusting and corresponding section loss of the steel members, particularly stringers, deck beams, and certain bottom chords. Major repairs were recommended for the deck and superstructure. In 1994, with the bridge's condition having deteriorated to "poor," three alternatives were examined for its repair or replacement. Replacement was determined to be the only practical alternative (VDOT Inspection Reports and Memorandums 1991, 1994).

History of Bridge Technology Employed

Jackson's Ferry Bridge employs two types of truss technology, the modified Warren truss and the cantilever truss. Both designs were perfected and widely utilized in the nineteenth century. The Warren truss was designed in England by James Warren and Theobald Monzani in 1848. The intention of the designers was to create the simplest possible truss, composed of members of equal length and dimension, allowing economy in its manufacture and assembly. In its original form, the Warren truss is composed of a series of connected equilateral triangles, with the diagonals functioning alternately in compression or tension. All loads on the truss produce a compressive stress in the top chord, a tensile stress in the bottom chord, and stresses equal in magnitude but opposite in sign in adjoining web members (diagonals). Although not a specific claim of the inventors, the design allowed for easy calculation of the stresses involved and would become the standard textbook example on the subject. With their design, Warren and Monzani introduced the concept that fifty years later would become the universally accepted "first principle" of structural engineering: simplicity is the highest attribute of good design. The simplicity and practical characteristics of the truss and have made it the most widely used and modified truss form (Condit 1960:117, 118; DuBois 1900:54; Ketchum 1905:65, 66).

When the original Warren form is modified, almost always with the purpose of increasing the span and load capabilities, the truss is properly referred to as a "triangular truss." The three most common modifications are the use of isosceles instead of equilateral triangles, the addition of a second or third set of diagonals, and the addition of vertical members.

Isosceles triangles result when the engineer increases the length of the diagonals (web members) over the length of chord that they span or connect. This modification increases the stiffness and strength of the truss by providing more diagonals for a given truss length to share in the resistance of the overall stresses, and by increasing the distance between the chords.

The addition of a second set of diagonals results in a truss composed of a series of X's and is referred to as a "double-intersecting Warren" or a "double-triangular" truss. The addition of a third set of diagonals creates a lattice truss, also called a "triple-intersecting Warren" or "triple-triangular" truss. These modifications also increase the strength of the truss by adding web members to resist the stresses.

The addition of vertical members divides the panels in half and provides intermediate support for the chord section between the panel-points. This modification reduces deflections in the chord and provides a suspension point for additional floor beams. The extra floor beams reduce the span of the deck stringers by half, allowing the use of smaller, lighter members. This lowers the dead-load of the bridge and therefore increases its live-load capacity, and also results in a savings in material costs (DuBois 1900:54; Hool and Kinne 1924:287; Ketchum 1905:65, 66; Mitchell 1937:511; Shanley 1944:128).

The earliest cantilever bridge known through documentary evidence was constructed in Japan in the fourth century. This bridge was a cantilever in its simplest form, consisting of a series of stacked timber beams, each successive timber projecting out slightly farther than the one below. A cantilever is defined as a beam, girder, truss, or other structural member which projects beyond its supporting wall or column (Harris 1977:87; Tyrrell 1911:258).

In America, cantilever bridges were proposed and discussed in engineering literature in the early nineteenth century, but it was not until 1867 that C.H. Parker designed and built the first bridges of the type in iron and wood. Parker, who is known for his redesign of the Pratt truss with a polygonal top chord, was chief engineer for the Solid Lever Bridge Company of Boston and with the company built cantilever bridges throughout New England and into Canada during the 1870s (Condit 1960:153). Bridges in the cantilever design were proposed in the competition for the Brooklyn Bridge and drew the attention of engineers to the long-span capabilities of the cantilever design and its unique ability to be erected without the use of falsework. The cantilever design allowed a truss to be erected outwards simultaneously in opposite directions from a pier, counterbalancing itself as it progressed. Erecting cranes crawled out along the completed sections as the structure was extended out over the channel. In cases where falsework could be used, as at Jackson's Ferry, the additional cost of steel for a cantilever bridge design was often found to be less than the overall cost of falsework. The design was particularly attractive where the risk of flooding threatened to wash out falsework.

By the 1880s the cantilever design was being employed by the railroads in spans of unprecedented length. The construction of the Hartford and Connecticut Western Railway Bridge over the Hudson River at Poughkeepsie in 1888 broke two bridge records and proved beyond a doubt the practical applications of the cantilever design. The Poughkeepsie Bridge was both the longest span (548') and the longest steel bridge in overall length (6,747') achieved up to that date, and it ushered in the beginning of the heyday of steel cantilever truss railroad bridges. The Firth of Forth Bridge completed in England in 1889 with a span of 1,710', and the Quebec Bridge over the St. Lawrence at Montreal, built 1912-1915 with a span of 1,800', established the practical limits for cantilever bridges, and these bridges remain in service today (Condit 1960:160; Kunz 1915:372, 375; Tyrrell 1911:269).

History of Virginia Bridge & Iron Company

The Virginia Bridge & Iron Company (VBI) was founded as the American Bridge & Iron Works in Roanoke in 1889 by C.C. Wentworth, J.B. Hunter, and C.L. Michael. Wentworth had been Assistant Chief Engineer of the Norfolk and Western Railway and Hunter had been Chief Draftsman for a steel furnace builder in Pittsburgh. After a successful beginning, financial problems dictated a reorganization in 1895. The company was recapitalized with $50,000 and incorporated as the Virginia Bridge & Iron Company (American Bridge Company 1975:50; *Roanoke Times* 1966; Stevens 1930:66).

By 1904, the Virginia Bridge & Iron Company was the largest steel fabricating company in the south, with a capacity of 12,000 tons annually. The product line consisted of bridges, turntables, warehouse factory buildings, and general structural iron and steel work, and the company employed 175 men in the shops and 150 men in the erecting department. The plant covered 10.5 acres and included a bridge shop 300' x 80', a large girder shop, and several smaller buildings. The plant was located on the lines of the Norfolk and Western Railroad and the Southern Railroad. The principals at the time were W.E. Robertson, President; C.E. Michael, Secretary; T.T. Fishburn, Treasurer; C.E. Hamlin, Contracting Engineer (Charlotte County 1899-1902; *Roanoke, The Magic City of Virginia* 1904:36-37).

Growth of the company continued through the early twentieth century. Plants were built in Memphis in 1908 and in Birmingham in 1922. By 1934, VBI employed 800 people, producing $5.4 million in product annually, and had offices in Birmingham, Memphis, Atlanta, New York, New Orleans, Los Angeles, Charlotte, North Carolina, Dallas, and El Paso (*Roanoke Times* 1934, 1936; Stevens 1930:66).

The depression years were hard on VBI, and in 1936, principal stockholder J.P. Fishburn sold the company to United States Steel Corporation. U.S. Steel continued to operate it under the name of Virginia Bridge Company. The business climate improved almost immediately and within a year of acquisition, steel tonnage produced by Virginia Bridge nearly tripled (American Bridge Company 1975:50).

During World War II Virginia Bridge produced nearly half a million tons of steel, including Bailey portable bridges, landing craft of several types, Liberty ships, dry docks, and numerous other important war products. Of particular note was their supply of steel for the Atom Bomb Plant at Oak Ridge, Tennessee. Virginia Bridge was the first structural steel fabricator in the country to receive the Army-Navy "E" Award for outstanding service to the Government (American Bridge Company 1975:51).

In 1952 Virginia Bridge was merged into the American Bridge Company, a subsidiary of U.S. Steel Corporation and the largest bridge company in the United States. VBI's facility in Roanoke served as the headquarters of the Southern Division of American Bridge Company until 1965, when the plant was closed (American Bridge Company 1975:18, 32).

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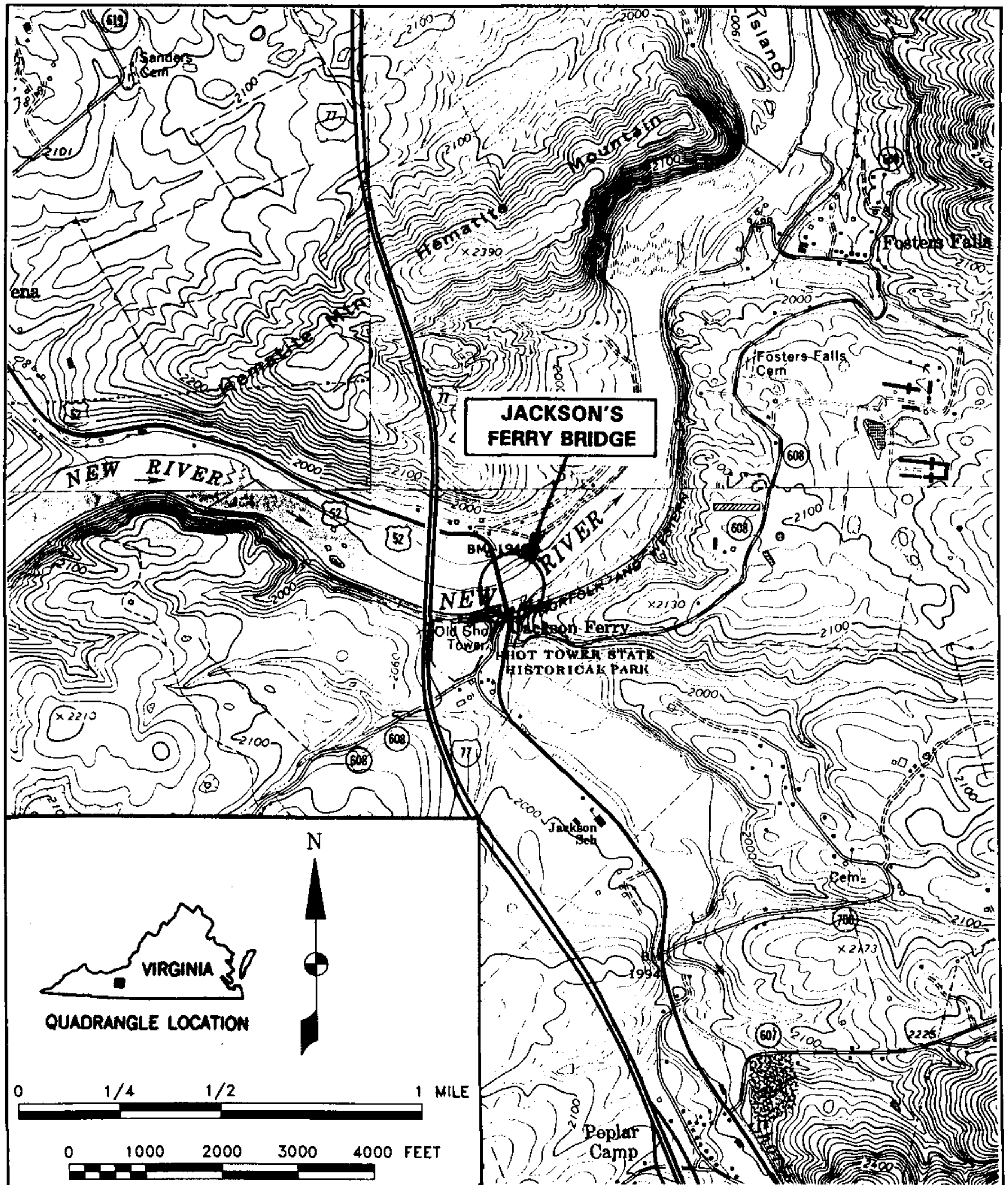

FIGURE 1: Location Map

SOURCE: USGS 7.5 Minute Virginia Quadrangles, Austinville, Foster Falls, Max Meadows, and Sylvatus